

## 物理解答用紙

(理工学部)

<b>1</b>	問1	(1) $v = \sqrt{2gL(1 - \cos\theta)}$	(2) 最高点: $mg \cos\theta$	(3) 最低点: $mg(3 - 2\cos\theta)$
	問2	(3) $S_2 - S_1 = \left(\frac{1}{r} - \frac{1}{L}\right) m v_B^2$	(4) $r_{\max} = \frac{v_B^2}{5g}$	問3 (5) $v_0 = \omega L \sin\theta$
		(6) $\omega = \sqrt{\frac{g}{L \cos\theta}}$	$T = 2\pi \sqrt{\frac{L \cos\theta}{g}}$	(7) $\theta_0 = 45^\circ$
		(8) $\sqrt{\frac{2(H - L \cos\theta_0)}{g}}$	(9) $\sqrt{v_0^2 + 2g(H - L \cos\theta_0)}$	
		(10) $\sqrt{H^2 + (L \sin\theta_0)^2 + \frac{2v_0^2(H - L \cos\theta_0)}{g}}$		

<b>2</b>	問1	(1) $\frac{R_4}{R_3 + R_4} E_1$	問2 (2) $\frac{E_1}{R_1}$	(3) $\frac{E_1}{R_1 + R_2}$	(4) $\frac{R_2}{R_1 R_2} C E_1$
		(5) $\textcircled{4}$	問3 (6) $I_3 = I_4 + I_5$	(7) $10.0V$	(8) $2.0mA$

<b>3</b>	問1	(1) $Q = \Delta U - W$	等温過程: $\Delta U$	断热過程: $Q$	(2) $C_p = C_v + R$	$\Delta U = n C_v \Delta T$
	問2	(3) $V_1 = \frac{nRT_1}{P_1}$	(4) $T_2 = \frac{5P_2 V_1}{nR}$	(5) $P_3 = \frac{1}{V_3} \left( nRT_2 - \frac{R}{C_v} W \right)$	(6) $Q_1 = 0.25 Q_H$	

<b>4</b>	問1	(1) 振動数: $\frac{340}{340 - v} f_0$	波長: $\frac{340 - v}{f_0}$	問2 (2) $\frac{v}{\sqrt{2}}$	
		(3) $\frac{680}{680 - v} f_0$	(4) $\textcircled{3}$	問3 (5) $50^\circ$	
	(6)	水温が高くなると音速が増加し、屈折の法則より屈折角は大きくなる。			